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| 10/529,498      | 04/25/2005  | Naoki Tanaka         | 330-296             | 8519             |

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EXAMINER

ABU-ALI, SHUANGYI

ART UNIT PAPER NUMBER

1755

DATE MAILED: 11/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/529,498

Applicant(s)

TANAKA ET AL.

Examiner

Shuangyi Abu-Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04/25/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 29 March 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

(1)

### *Specification*

Claim 1 is objected to because of the following informalities: solid is misspelled.

Appropriate correction is required.

(2)

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1- 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,071,606 to Yamazaki et al., in view of U.S. Patent No. 5,897,958 to Yamada et al.

Regarding claim 1, Yamazaki et al. disclose a method to provide a durable hydrophilic film having photocatalyst activity on a substrate (col. 1, lines 62-64 and col.4, line 20)) through a sol mixture. The sol mixture comprise of a first sol of anatase titanium oxide (col. 3, lines 6-7), a second sol of colloidal silica (col. 4, line 40) and a third sol of amorphous metal oxide such as silica to bind titania crystal together (col. 3, lines 14-15, and col. 3, lines 35-37). The amount of colloidal silica is preferred in the amount of 20-70% based on the total weight of the solid of sol mixture (col. 4, lines 58-60). The amount of titania is in the amount of 75-90 mole% and the third sol of silica is in the amount of 10-25 mole% based on the total moles of titania and the third silica sol (col.4, lines 8-12). This is about titania amount of 24-74% and third sol of silica of 2.4-16% based on the total weight of sol solid.

Although Yamazaki et al. are silent about using titanium dioxide as a binder in sol mixture as claimed by applicant in claim1, Yamada et al. drawn to the same invention of photocatalyst titanium oxide sol mixture, disclose titanium oxide made from titanium alkoxide acts as binder to bind titanium oxide particles together (col. 7, lines 19-23 and lines 45-46).

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It would have been obvious to one of ordinary skill in the art at the time of invention to use the titanium oxide binder of Yamada et al. to Yamazaki et al. photocatalyst sol mixture, motivated by the fact that the titanium oxide as a binder is compatible with the anatase titanium oxide and at the same time it provides high catalyst activity, and also the film made from such sol mixture has high stability and durability (col. 6, lines 47-52).

Regarding claim 2, Yamada et al. disclose that ethylene glycol monoethyl ether is used as dispersing solvent in photocatalyst sol mixture (col. 6, lines 17-18).

Regarding claim 3, Yamada et al. disclose that optional proportion of methanol, ethanol and propanol are used in photocatalyst coating liquid to provide sol stability (col. 6, lines 9-11)

Regarding claims 4-8, Yamazaki et al. disclose that the hydrophilic film, which has photocatalyst ability, is formed on various substrates such as glass, metal, plastic and so on (col. 1, line 10 and col.4, lines 20-21).

(3)

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Such prior art is list on PTO-892 B-C and E.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuangyi Abu-Ali whose telephone number is 571-272-6453. The examiner can normally be reached on Monday - Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SA

  
J. A. LORENGO  
SUPERVISORY PATENT EXAMINER